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ABSTRACT

As part of a language arts series for kindergarten through grade nine, this eighth grade guide examines environmental values, concepts, and problems according to a common conceptual scheme: all living things, including humans, are interrelated and interdependent; heredity and environment interact to determine the characteristics of an organism and therefore a population; living things and environments are in a continuous state of change; the world has finite resources and almost infinite demands are made on these resources; and each individual, as an agent of change, has a responsibility to the environment. The guide offers a series of environmental activities that stress the development of reading, writing, and discussion skills and emphasize the discovery method of observation. The guide includes background information, a teacher's outline, and task sheets for the students. (MAI)

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INDIAN RIVER COUNTY

ENVIRONMENTAL EDUCATION INSTRUCTIONAL GUIDE

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ENVIRONMENTAL EDUCATION

INSTRUCTIONAL GUIDE

This publication serves as the teaching nucleus for Environmental Education activities in Eighth Grade. The development of this program is a joint effort of teachers and staff of the Indian River County Schools.

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We wish to thank the Title III, E.S.E.A. Lee County Environmental Education Project as the conceptual framework for the organization of the guides comes from their work. Also, some of the activities in this guide are from their Interdisciplinary Concepts and Activities Guides.

This publication is one in a series developed by the Environmental Education Program for Indian River County Schools. This series is designed to be used by teachers, students and community members to help them to utilize community resources in developing and teaching environmental concepts, responsibility and in seeking ways to solve environmental problems. All materials are in pilot form and may be revised.

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INTRODUCTION

ABOUT THE ENVIRONMENT

The environment is perhaps the most important complex of systems for man. Yet it is perhaps the most abused. It is becoming trite to say this, but none the less true--unless we change our ways, we will die.

Throughout history men have been able to change. They have done this with much pain and toil. The responsibility of this change has in the past rested on certain individual leaders. Today these leaders must reach a wide population and they must reach them at a time when habits are forming. The teachers of today are the leaders who must take up the cause of educating future populations about the delicate balance we live in.

It seems strange that many peoples of the world (American Indians, for one) need no formal or separate environmental education program for their young. Indian children grow up with the notion that the universe and the environment is one living thing. It must be respected and revered as something sacred. But somehow, modern man has lost vision of that simple concept, if indeed he ever possessed it. Environmental education is a way we can regain a respect that seems to come natural to some populations. It is a way we can be fit for survival and for prevailing on Earth.

In the year 2006, the earth will have doubled the present number of people. Within just 35 years another 3 billion people will be competing for the world's already taxed resources. This is not a problem of future generations, but an existing one that you and your students are already witnessing. As the population soars, crime rates, suicides, and psychological disorders increase at disproportional rates. More species are constantly being added to the endangered species lists, and more wilderness areas are continually being infringed upon by development. Our soil is lost at an alarming rate as it, with a heavy load of fertilizer, is being washed by rains into our precious water supplies.

INTRODUCTION

ABOUT ENVIRONMENTAL EDUCATION

There doesn't appear to be any part of this planet that is not affected by man's hand. Distributing the world's limited resources and minimizing the damage to our planet is going to be difficult. The dilemma is not going to be the problem of any one discipline area; rather, it will touch each of us, in all phases of our lives. Maintaining a quality of life will necessitate new directions in our literature, economics, psychology, food choices, engineering, and even in our daily lives.

Attaining environmental quality is everyone's responsibility, and, as such, it is going to require knowledge on the part of all our citizens. If our students are to make intelligent choices they will feel comfortable living with, they are going to need you to provide them with much of the background information they will need. Our environmental problems demand our attention in every phase of the curriculum so that our students can be prepared to solve this enigma.

Three themes or stages in educating a student to prepare him for environmental choices are: 1) awareness of the environment; 2) knowledge of the environment; and 3) action in the sense of effecting a solution.

Predicting the experiences and knowledge students will need in the future is always a difficult task. However, a few basics are readily identifiable. It seems logical to assume that a person cannot make intelligent decisions if he is not aware of the problem, or even the existence of the area that has the problem. Next, it is important that he understands or has some basic knowledge about the stressed area and the stress factors involved. Finally, once an individual is aware of a problem and has knowledge about it, he must have the tools to effect a solution for the problem.

We have targeted awarenesses at the primary and lower intermediate grades, knowledge at the upper intermediate and middle school level, and action begins in

the upper middle school running through the high school and into the adult community.

The K-9 curriculum guides compiled by various environmentalists are organized around several basic conceptual schemes that were felt to be necessary for a working knowledge of the environment. In addition,these schemes and the activities suggested for their illustration, have been applied as much as possible to the unique problems of Indian River County.

A FINAL NOTE

Education about the environment can too easily become merely an academic exercise, rather than vital interaction. Many researchers have shown that the discovery method of learning allows a more thorough and lasting attainment of the desired principles and it heightens motivation at the same time. The discovery method provides an individual experience and allows success for a wide ability range of students, because it is discovering new knowledge at each student's own particular level.

Your role in the environmental education campaign is important for the student's ability to perceive the subtleties of nature will often depend on your guidance. Most often this is not done through telling the student the names of everything he sees. We need to guide him to the relationships and beauties rather than tell him about it. The student will be eternally grateful to the teacher who helps him observe the natural wonders he encounters. He will long remember the first time he saw a beautiful bird or had someone help him closely examine a delicate wildflower. If we ask him guiding questions which lead him to make his own discoveries we are doing him the greatest service a teacher can do; we are leading the person to the knowledge about using his own brain. We are showing him how to use his capacities of reason and understanding and enjoyment.

INDIAN RIVER COUNTY RESOURCES

The Florida Division of Forestry survey of 1971 showed 44.4 thousand acres of forest land in Indian River County. This report rated the land's most valuable asset as a scenic and recreation amenity. Forestland is also a favorable modifier of the increasingly contaminated environment caused by increased population growth, urbanization, and industrialization and provides relief from crowded city living.

There are five forest types. They are listed here from largest acreage to smallest.

1. Pine flatwoods, characterized by open stand of slash pine mingled with an understory of scrub palmetto and grass.
2. Hardwood and cypress swamps--include tupelo, black gum, sweet gum, some of the oaks singly or in combination, and often associated with willow, ash, elm, water hickory and maple. The soil here is rich.
3. Sand pine scrub--found on higher, drier ridges, principally on St. Lucie sands.
4. Mixed pine hardwood--found in the transition zones along major streams and drainage between the bottomland hardwood swamps and the pine flatwoods. This is a mixture of longleaf and slash pine, associated with willow oak, live oak, sweet gum and hickory.
5. Mangrove forest--along the costal islands and tidal flats, consisting of red and black mangrove in dense thickets along partially submerged lands subject to periodic wash by high tides and brackish estuarine waters.

The importance of natural hardwood, swamps, and wetlands as a natural filter should not be overlooked. Repeated studies and experience elsewhere show that

water delivered through natural drainage tends to improve in quality through the process of self-purification as it flows through and into the forest floor--that spongy, natural filter made up of debris, leaves and partially decayed vegetative duff. Water drained out of any watershed by canal will not show the improved quality of this naturally filtered product.

Although the hardwood and cypress swamps (consisting of a little over 10,000 acres of forested land) remained largely intact in this area for many years, they have been abused by over-cutting, promiscuous burning, over-grazing, and draining, all of which detract from their usefulness as a natural filter. Since 1970 drastic reductions of the hardwood Cypress community has occurred by the drainage of large areas of marsh for citrus production.

The value of mangrove forests to the marine ecosystem is well known. According to the distinguished ecologist, Dr. E. P. Odum of the University of Georgia, this interaction of land, sea, air and sunlight provides some of the richest food-producing areas in the world--20 times as productive per unit as the open sea, seven times as productive as an alfalfa field, and twice as productive as a field of corn!! Efforts should be continued to preserve the existing mangrove along the Indian River and expand it to the barren islands capable of supporting this growth. Some preliminary efforts at seed collection and restablishment are going on here and elsewhere in the state where this problem exists.

The Pelican Island Audubon Society has listed the ten major areas of Environmental and Human Concern in Indian River County. That list follows.

Areas of Environmental and Human Concern

1. Preservation and Protection of The Indian River Estuary, Including:

   a. Red and Black Mangrove swamplands
   b. Batis (pickleweed) marsh
   c. Submerged marine grass beds
   d. Spoil Islands
   e. Marshland functions
      (1) Marine productivity
      (2) Hurricane and storm protection
      (3) Wildlife feeding and nesting habitat
      (4) Pollutant filtration
      (5) Aesthetic values

2. Water Resources

   a. Shallow well aquifer
   b. Floridan aquifer
   c. Protection of recharge areas
   d. St. Johns River headwater marshlands

3. Water Pollution Abatement

   a. Sewage treatment plants
   b. Septic tanks and drainfields
   c. Canals and ditches
   d. Lakes, ponds, borrow pits
   e. Agricultural runoff
   f. Urban runoff
   g. Public health
   h. Tertiary treatment, land-spraying
   i. Sand-mining operations

4. Solid Waste Disposal

   a. Sanitary land fills
   b. Recycling
   c. Littering

5. Dune and Beach Protection and Restoration

6. Rare and Endangered Habitats

   a. Parklands
   b. Coastal forest hammocks
   c. Sand pine community
   d. Pine-flatwood community
   e. Freshwater marsh community

7. Noise Pollution

8. Air Pollution

9. Growth and Development Impact

   a. Environmental
   b. Economic
   c. Social

10. Development of Land-Use Policies and Ethics

Endangered and Threatened Wildlife in Indian River County

Endangered - Wildlife in this category are in danger of disappearing unless steps are taken to prevent this.

Birds: Wood Stork - A wetland inhabitant in marshes and water impoundments. In recent years 100-200 pairs have been nesting annually on Pelican Island.

Florida Everglade Kite - Not more than 100-150 of these freshwater marsh inhabiting birds survive in Florida. Several pairs have been found each spring in the St. Johns Water Management District reservoir west of Vero Beach, but overdrainage of this reservoir and subsequent loss of the Apple Snail--its sole food--has caused nesting failures.

Red-cockaded Woodpecker - Less than a half dozen birds occur in Indian River County, in a strip of Slash Pine forest along the upper reaches of the Sebastian River, southwest of Roseland. This species is dependent upon pines that have a fungus disease of the heartwood in which they excavate their nesting and roosting cavities.

Mammals: Florida Panther - Possibly one or two pairs of this rare carnivore, sometimes called a puma, or cougar, remain precariously in the wilder parts of Indian River County.

Manatee - Each winter several manatees are seen in the Indian River, especially in the warmer waters of the lagoon and canal near Vista Harbors and the outfall canal of the Vero Beach power plant. They are particularly vulnerable to injury by outboard motor propellers.

Reptiles: American Crocodile - This reptile is usually found only along the coastal areas of south Florida and the keys, but a large 15-foot crocodile was found in 1974 in a pond at Vista Royale south of Vero Beach.

Atlantic Green Turtle - each year several females of this species come ashore to lay eggs on the beach.

Atlantic Saltmarsh Snake - one of the few snakes found in salt water. It is a harmless water snake and may be found inhabiting mosquito control impoundments on both sides of the Indian River.

Threatened - Wildlife not in imminent danger of extinction, but could become endangered if conditions worsen.

Birds: Brown Pelican - Indian River County probably has the largest concentration of Brown Pelicans in North America. Outside of Florida pesticides have seriously affected this species reproduction.

Magnificent Frigatebird - Occasionally seen over the Indian River and the beach and at Pelican Island. Considered threatened because its only nesting area in North America is on the Marquesas Keys near Key West.

Reddish Egret - One or two individuals are seen each year in the Indian River and at Sebastian Inlet. The last species to recover from the slaughter of the plume trade days.

Roseate Spoonbill - Several dozen or more of this species visit Indian River Cojnty during the spring and summer. Occasionally seen in larger drainage canals west of Vero Beach.

Osprey - Several breeding pairs found along the Indian River and at Blue Cypress Lake. More numerous in winter when northern birds are present.

Caracara - Only around 250 estimated to remain in Florida. One or two are sometimes seen in ranch areas in western parts of the county.

American Oystercatcher - Two, possibly three pairs nest on spoil islands in Indian River. Very intolerant of human disturbance.

Least Tern - Our smallest tern, here in summer only and often seen fishing in the surf. Dependent upon spoil islands and sand spits for nesting sites.

Florida Scrub Jay - Probably less than a dozen pairs remain in Indian River County in Sandpine-scrub oak communities near Donald MacDonald Park, Winter Beach-Gifford area along Old Dixie, and Whispering Palms area, south of Vero Beach. Dependent upon undisturbed scrub habitat.

Mammals: Florida Mouse - Found only in sandpine-scrub habitat on the Florida ridge.

Florida Beach Mouse - Although relatively common farther north, the destruction of beach dune vegetation in Indian River County has greatly reduced the numbers of this tiny, pale-brown mouse.

Round-tailed Muskrat - Found in freshwater marshes, but few remain in Indian River County because of overdrainage.

Reptiles: Gopher Tortoise - Although still frequently seen in our area, the destruction of Sandpine and Slash Pine Flatwoods habitat has greatly reduced their numbers.

Atlantic Loggerhead Turtle - Several hundred females nest each year on Indian River County beaches, but successful hatching is low because of predation by raccoons, disturbance by people and excessive beach erosion where man-made structures are too close to the beach.

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Human population size, like that of other organisms, will be limited by environmental controls. Before that limit is reached the quality of life will become more unpleasant.

Conceptual Scheme V 19

We live in a world of finite resources and almost infinite demands on these resources.

Concept A 19

The earth is a closed environmental system.

Conceptual Scheme VI 22

Each individual has a role as an agent for change in the environment and therefore has a responsibility to the environment.

Concept A 22

In order to better understand the problems and solutions of ecology, citizens must understand basic terms associated with ecological literature.

Concept B 23

Man is the sole organism that can consciously modify his environment.

Bibliography
Appendix A

CONCEPTUAL SCHEME I

ALL LIVING THINGS, INCLUDING MAN, ARE INTERRELATED AND, THEREFORE, ARE ALSO INTERDEPENDENT.

Activity 1

Read the story "The Turtle" by George Vukelich. (Counterpoint, Scott Foresman, 1967)

Contrast the attitudes of the two men toward killing the turtle.

What is Old Tony trying to say when he urges that the turtle be fought in the water?

What situations justify the killing of an animal?

Activity 2

Have a student report on the meaning of the term "reverence for life" as used by Albert Schweitzer.

Activity 3

Using the animal track kit from the county office, have each student or each group of four students choose an animal.

a. Make track reproductions.
b. Research the animal.
c. A student should produce a factual paragraph on the animal. In a group each person should write on a different topic concerning the animal.
d. A student or a group will write a myth explaining the reason for one fact about the animal, or a fable using the animal as a character to help the reader understand a lesson.

Activity 4

Have the class read true animal stories from the library, and have a story telling day with each child sharing a part of his book.

Activity 5

Make a grab bag for oral assignments. On a Monday pass the bag containing topics for speeches down the row to the first five students. Those students will report one each day the following week. On Monday of the following week the bag will be passed to the next five students to be preparing for the third week. Continue each successive week until each student has had an opportunity for speaking.

The following assignments are related to the local ecological concerns:

1. Pretend you are addressing a group of contractors from Vero who are interested in clearing land at the edge of Indian River. Convince them of the importance of red and black mangrove to the economy of the area.

2. The Newcomers, a club composed of people who have lived in Vero three years or less, have invited you to speak to them on ways to protect themselves and their property during a hurricane.

3. The Jaycees are interested in sponsoring a recycling project and have invited you to speak on the various items it is important to recycle and why.

4. You are addressing a fruit growers cooperative and must point out dangers from the use of insecticides and herbicides and ways to safely apply such materials.

CONCEPTUAL SCHEME II

HEREDITY AND ENVIRONMENT INTERACT TO DETERMINE THE CHARACTERISTIC OF AN ORGANISM AND, THEREFORE, A POPULATION.

Concept A

Each organism is adapted to a specific environment and will compete with other organisms for a specific habitat.

Activity 1

Read the poems "The Snake" by D. H. Lawrence and "The Fish" by Elizabeth Bishop. (Counterpoint, Scott Foresman, 1967) Compare the two poems in the outcome of the competition with man or men. How does each show his adaptation to his specific environment? Why does each man act as he does?

Activity 2

The student will research a living creature which interests him. Preferably the student should choose a Florida creature. Encourage some to consider one of the "endangered dozen" (Florida's Endangered Dozen, a pamphlet in the vertical file of the library.) He may, however, choose other endangered species or any creature in the world.

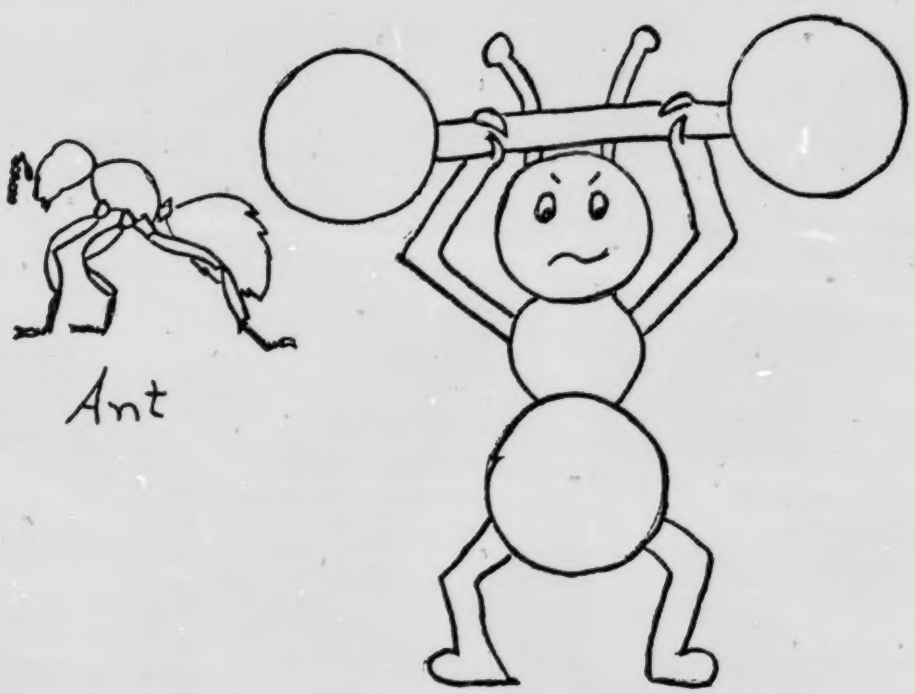
Have students produce two compositions on each creature. One should be a factual sentence outline including such topics as description of the animal, its adaptation to its environment, food needed, kind of environment needed, usefulness of the creature in its "community." The second should be an alliterative story about the creature. Have the student create a three word

Scheme II - A

alliterative name for the hero (Friendly Freddy Frog, Aggravating Abner Alligator) and write a story using as many words with the same initial sound as possible.

Activity 3

Plan a circus! Each student should choose one insect and make an outline of its needs, adaptations, function in the community, etc. Then he should choose one outstanding fact and create a side show performer. (A flea is a record jumper; an ant could be a strong man, etc.) The student then should write the barker's spiel about the show about to be seen. Drawings of the actual insect or the insect personification could be made for fun.



Activity 4

PREREQUISITE

On page 564 of Counterpoint are the definition and a few examples of setting. Before reading "To Build a Fire," read the page and discuss with your students, relating setting to "environment."

READ THE STORY

Discuss the effect of the environment on the main character and why he died (not adapted to cold weather) and why the dog lived (adaptation to cold weather - warm coat).

ASSIGNMENT

Give at least three examples of specific organisms (animals or plants) that have adapted to a certain environment in order to survive and three examples of organisms that did not adapt and either moved to a more suitable environment, became extinct, or are threatened with extinction. Assign the students to groups of three each. One class period should be enough for researching this material. In order to get your students on the right track, you might mention that if an organism is present now, it has had to adapt in order to survive. If an organism is extinct, it must not have adapted, or it would have survived. Have each group read aloud their findings to the class and discuss them with the class. Tie into the assignment and the adaptation or lack of adaptation by the main characters. After the discussion, collect them.

Suggested ideas for research:

1. Classroom - Make selected library books, pamphlets, encyclopedias and dictionaries available in the classroom.
2. Library - Reserve books which deal with your selected subject.

Activity 5

Using the lists of adapted and extinct organisms collected, create a word-find. After the students have found all words, have them make three (3) columns on the back of their word-find sheet thus:

Adapted	Extinct or Threatened Extinction	Reasons or Methods

Have the students list each of the species found in the word-find under the appropriate heading and then fill in reasons (for extinction) or methods (of adaptation and survival) in the remaining column.

Scheme II - A

Suggested Adapted	Extinct or Threatened Extinction	Reasons or Methods
Man		Moved to more comfortable climates, adapted clothing to suit environment.
Husky dog		Warm coat protects them.
	Dinosaurs (extinct)	Couldn't adapt to colder climate, food supply exhausted.
Insects		Develop immunity to insecticides.
Cactus		Stores water during dry months, can absorb much water in wet months.
	Dodo bird (extinct)	Killed and eaten by man, eggs devoured by man's pets.
	Eastern bison (extinct)	Starved in cold weather, killed by man for food.
	Sea mink (extinct)	Pelts sought by trappers, slaughtered by man.
	Wood bison (threatened extinct)	Exploited by man for food and clothing
	Eastern cougar (threatened extinct)	Habitat destruction, food source disappearing, hunted by man.
	Kaibab squirrel (threatened extinct)	Threatened by habitat changes.

Many more examples of extinct animals can be found in Lost Wild America by Robert M. McClung, 599M. More on threatened species in Let Them Live by Kai Curry-Lindahl, 591C. Adapted organisms are easy as any living species had to adapt in order to survive.

Scheme II - B, C

Concept B

Each species is adapted for survival in a specific environment, and this determines their natural distribution.

Activity 1

Read: "Closing in on the Loss Ness Monster," page 217 in Voices)

After having read the story, have the students draw their own impressions of "Nessie." Under the drawings, have them list possible explanations for what the monster is and how it has survived. Discuss, in class, how any species becomes extinct and how we, as citizens, can protect endangered species.

Concept C

Environment modifies the expression of hereditary characteristics.

Activity 1

"The Diary of Anne Frank"

The Frank family is Jewish and considered, by many, to be of a different culture. Certainly their heredity is different from any other group of people. For this difference, Jews are often persecuted by prejudiced and misguided people.

After having read the diary, divide the class into four or five groups of six people each. Each group should select a chairman to oversee all progress within the group. List several topics on the board relevant to the theme of war and

Scheme II - C

prejudice (list of suggested topics below). Have each group select a topic. Then list the group members, topic and chairman on a sheet of paper to be handed in. Use several (3 suggested) days in the library to collect information on the assigned topics. Set aside two days to hold panel discussions by each group. Each group should sit before the class (preferably at a table) and present their information. A question and answer session should follow each group. Wrap up the discussions with a summarization of the presented material, mentioning how war and prejudice upset the ecological balance of our world.

Suggested list of topics for panel discussions:

1. Information on the Jews as a people - their customs, holidays, beliefs, religion, what makes them unique.
2. How and why Hitler persecuted the Jews during World War II, and the results on the Jewish people.
3. The effects of war (any war) on the ecosystem of a war-torn area (burning of foliage, pollution of water, killing of wildlife and humans, tremendous use of fuels).
4. Restoration of a war-torn area (revitalization of agriculture, wildlife, water, food sources).
5. The effect of World War II on the Franks during their stay and after their capture (effect of war on humans, generally).

CONCEPTUAL SCHEME III

LIVING THINGS AND ENVIRONMENTS ARE IN A CONSTANT STATE OF CHANGE.

Concept A

The flow of water results in natural changes such as floods, sedimentation and erosion.

Activity 1

Poetry Unit

There are two possible avenues for this activity (Plan A is preferable).

Plan A

After having studied basic poetic terms, and specifically haiku, take a trip with your class to a relatively deserted part of the beach (non-school days are preferable). Students should have paper and writing utensils with them. Ask them to select one item on the beach and write at least two haiku on the beach itself. The students should select an object that has been changed by the climate or environment of the beach. Have the students sit in a relatively small area on the beach to write their poems. (Field trip instructions in appendix.)

Plan B

If a field trip is impossible, you can recreate the beach in your classroom. Audio-visual aids such as pictures, filmstrips and music can be helpful in creating a mood. Have the students bring objects found on a beach to class

and distribute them around the room (bring some of your own). Have them write two haiku on one object from the beach and one haiku on the beach itself.

Suggestions for beach objects to write on:

Seashell	Clouds
Grain of sand	Seaweed
Piece of driftwood	Sunlight
Litter	A plane
Birds	A certain person seen on the beach
Sand crabs	Unusual items not always seen on
A wave	the beach

Concept B

Organisms gradually change over a long period of time according to natural selection and adaptation.

Activity 1

Make a mobile tracing the evolution and adaptation of a certain species of organism. The mobile should include at least three changes the organism has undergone in order to better adapt to its environment.

Examples for mobiles:

1. Man
2. Horse
3. Giraffe
4. Palm trees
5. Vulture
6. Insects

Scheme III - C

Concept C

Adaptability is necessary to survival.

Activity 1

Read the story "Children of the Harvest" by Lois Phillips Hudson. (Counterpoint, Scott Foresman, 1967)

What were the changes in environment?

How did the girl react in each of the different environments?

Activity 2

Read "The Dinner Party" by Mona Gardner. (Voices A, Ginn and Company, 1972)

What part did adaptability play in survival in this story?

CONCEPTUAL SCHEME IV

AS A POPULATION INCREASES ITS EFFECTS ON THE ENVIRONMENT BECOME MORE PRONOUNCED.

Concept A

An area of land can support only a given number of a particular kind of organism.

Activity 1

Literary works involved - "The Kitten"or Black Boy by Richard Wright in Counterpoint in Literature and Eighth Grade Voices, and The Diary of Anne Frank in Counterpoint.

Select seven or eight students to participate in the first production. Have the students stand in an area approximately 4 x 4 feet. Have them imagine that they are in an elevator that is stuck between two floors. They should relate their feelings aloud, as if they were truly in an overpopulated situation. If the students have difficulty relating their feelings, ask the following questions:

1. Do you enjoy the closeness of the other people in the elevator?
2. What kinds of feelings do you hold towards the other people in the elevator? Do you resent them?
3. How are you going to handle the situation - calmly, hysterically, fatalistically?

Scheme IV - A

After the first group has held their positions for several minutes, have them return to their seats. Have another group of eight assume the elevator situation. Repeat until all students have had the feeling of overcrowding.

Plan A

Have the students write a short composition on how they felt about being crowded and relate it to how people must feel in an over-populated tenement (if you are using Black Boy or "The Kitten" or how the Franks must have felt in their crowded annex - Diary of Anne Frank).

Plan B

Discuss the feelings the students exhibited during their skits. Have them write a short composition on what earth will be like when our population becomes over-crowded. What effect does overpopulation have on human nature?

Activity 2

Literary work used - "Nightmare Number 3" by Stephen Vincent Benet in Counterpoint in Literature.

Several popular movies such as Frogs and The Birds are centered around the theme of overpopulation of a certain species. Select any species of animal or plant (excluding man) and write a one page composition on how earth would be changed if there were an overabundance of this species.

Suggestions of themes

1. Dogs and other domestic animals rebelling in numbers against man's domination (Animal Farm).
2. Bumble bees or ants and their organized societies taking over
3. Any animal special to our environment (alligators, large house spiders, etc.)
4. Palm trees or Australian pines forcing out other vegetation and threatening man.

Concept B

Human population size, like that of other organisms, will be limited by environmental controls. Before that limit is reached the quality of life will become more unpleasant.

Activity 1

Read the play Diary of Anne Frank. (Counterpoint, Scott Foresman, 1967) Discuss the results of overcrowding in the annex. Make parallels in city life.

Activity 2

Place five desks in a very desirable place and assign students to them. Each day remove one desk. On the fifth day discuss the aggressive behavior.

Activity 3

Show the movie Tragedy of the Commons from the county office.

Discuss the behavior arising from overcrowding.

Activity 4

Divide into investigative teams:

a. Have one group graph the crime rate over a five or ten year span in one area.

b. Have one group make a map of the United States. Mark an equal number of small cities and large cities. By each city write the crime rate of that city.

Scheme IV - B

c. Have one group make a chart of the rise in population and the rise in the use of drugs.

d. Have one group interview an official from the County Health Department about the transmission of disease in crowded and uncrowded areas and what can be done to minimize the spread of disease.

e. Have one group study the ways the government is attempting to relieve the pressures created by overcrowding. (Parks, more policemen, directed community activities, etc.)

Activity 5

Read the story "The Kitten" by Richard Wright (Counterpoint, Scott Foresman, 1967).

Discuss the causes for the violence.

Activity 6

Read "The Streets of Memphis" by Richard Wright. (Coping, MacMillan)

Discuss the causes for violence.

Activity 7

Make cartoons of aggressive behavior in our school. Discuss them and the part crowding plays. What are some alternatives?

Activity 8

Write satires of objectionable behavior in school to be published in school newspaper.

Activity 9

Read "Obituary of a Heroin Addict Who Died at 12" by Joseph Lilyveld. (Voices A, Ginn and Company, 1972). Write a newspaper article on causes of drug addiction.

Scheme IV - B

Activity 10

Read "The Wise and the Weak" by Phillip Aponte, (Voices A, Ginn and Company, 1972)

Discuss this aggressive behavior. Is this limited to city life?

CONCEPTUAL SCHEME V

WE LIVE IN A WORLD OF FINITE RESOURCES AND ALMOST INFINITE DEMANDS ON THESE RESOURCES.

Concept A

The earth is a closed environmental system.

Activity 1

During your outlining unit, give the students the following list of words and phrases to correlate into an outline.

Energy sources - Title of outline

Major ideas	Minor ideas
Fossil fuels	Coal
Hydropower	Natural gas
Generator (Electrical)	Petroleum
Solar	Oil
Chemical	Gasoline
Nuclear	Dams
	Water wheels
	Power plants
	Relay stations
	Battery
	Dry cell
	Fission
	Fusion

It will be necessary for the students to look up some of the words in the dictionary in order for them to place the items under the correct headings.

Outline

Energy Sources

I. Fossil fuels

A. Coal
B. Natural gas
C. Petroleum
   1. Oil
   2. Gasoline

Scheme V - A

Outline (cont.)

II. Hydropower

A. Dams
B. Water wheel

III. Electrical (Generator)

A. Power plants
B. Relay stations

IV. Solar

V. Chemical

A. Battery
B. Dry cell

VI. Nuclear

A. Fission
B. Fusion

Activity 2

Give a preliminary lecture on blackouts (information helpful to you is listed below). Tell the students to take notes during this lecture. After the lecture, have the students make a picture story on a piece of posterboard, using one reason for a blackout, problems encountered by citizens during a blackout, and how power is restored. Have the best poster displayed and explained by the creators.

Ideas and information for lecture on blackouts:

Reasons

1. Great demand of power and transformer "overloads".

2. Power lines cut or damaged (storm, lightning).

Scheme V - A, B

3. Intentional blackouts in order for repairs to be made.

Results

Every appliance using electricity stops functioning.

Repairs

When a certain area is without electricity, a signal lets the employees at the plant know. Wires are fixed, or if a transformer burns out, it is replaced or repaired.

Concept B

Value judgments must be made in the use of available resources.

Activity 1

Read the story "Two Were Left" by Hugh Cave (Voices A, Ginn and Company, 1972).

What source of food was available to the boy?

Why did he make his decision about using that food?

What choice must you make about use of resources?

CONCEPTUAL SCHEME VI

EACH INDIVIDUAL HAS A ROLE AS AN AGENT FOR CHANGE IN THE ENVIRONMENT AND THEREFORE HAS A RESPONSIBILITY TO THE ENVIRONMENT.

Concept A

In order to better understand the problems and solutions of ecology, citizens must understand basic terms associated with ecological literature.

Activity 1

Spelling, vocabulary, and dictionary work

Assign the words listed below to be looked up in the dictionary, listing the part of speech, etymology and definition of each word. Discuss the words and definitions aloud.

Stripmining	Generator	Adaptation
Crisis	Petroleum	Environment
Blackout	Fossil fuel	Conservation
Energy	Hydropower	Ecology
Fuse	Habitat	Pollution
Overpopulation		Litter

Activity 2

Using ten of the above list of words, have each student write a short story about a contemporary person or animal.

Activity 3

Give a spelling test (or spelling bee) on the above list of words.

Scheme VI - B

Concept B

Man is the sole organism that can consciously modify his environment.

Activity 1

Literary work - "Children of the Harvest" in Counterpoint

Distribute the following questions on dittoed sheets and discuss them in class. Have the students write the answers as each question is discussed.

1. We are the most prosperous and envied country in the world, but also the most troubled.
2. Standard of living goes up - tranquility and peace go down.
3. What are the good old days?
4. Simple life such as pioneer days has been made romantic (television show and book Little House on the Prairie). Name five positive factors and five negative factors of pioneer life.

Positive Factors	Negative Factors
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

5. Each stage of development has been at the expense of environment.
6. How have some people handled these pressures poorly?

Scheme VI - B

Activity 2

Suggest that the class is working together on making our community aware of the ecological problems that face us - water pollution, air pollution, destruction of wildlife, wasting of energy, and such. Each student is to construct one poster or collage outlining or detailing one or all of these problems. The students should keep in mind that these posters are to be displayed to the public so they should contain some slogan or statement that would "bring the point home" to the public. If the products are especially good, make sure that they are displayed in the school or in places of business around town.

Activity 3

Draw a cartoon about the energy crisis (or pollution problem). This can be one picture with a caption or it can be a complete comic strip with dialogue from the characters.

Activity 4

Divide your class into pairs. Have each pair select a section of the school campus or of the town. Each pair of students should write an anti-litter commercial (television or radio) for their particular area. The best commercials can be presented to the class, or even recorded and given to local radio stations to be broadcast.

Scheme VI - B

Activity 5

Read the story "The Flying Machine" by Ray Bradbury. (Counterpoint, Scott Foresman, 1967) Discuss the reasons for the emperor's action. What does the story say about progress? Is this true today? Are progress and change synonyms?

Activity 6

"Did you know that in Oklahoma the state's average humidity has been changed due to an expansive reservoir system?...This tends to moderate the high and low temperatures. Would draining Florida's wetlands possibly affect our local temperatures?...It will produce higher high temperatures and lower low temperatu. es." (Lee County's Environmental Interdisciplinary Concepts and Activities.)

From class discussion make a list of changes or projected changes in our area. Divide into groups with each group considering one change. Have the group make a list of questions that need to be answered about the effects of the proposal. List advantages and disadvantages. Let each group share its ideas with the class for class reaction.

Activity 7

Read the story "Flowers for Algernon" by Daniel Keyes. (Counterpoint, Scott Foresman, 1967)

Would Charlie, knowing the outcome, choose the operation again? Consider the comparable operations possible now. (Transplants) Discuss different value judgments to be

considered today in making laws which regulate the using of organs of others.

Activity 8

Look at our school environment. Make a decision about a need that could be filled. Plan a compaign. Make a poster. Write a satire or design a cartoon.

Activity 9

The student should choose a tree or bush he likes, read about it, and write a factual paragraph about it. Then he should compare a person, or life to such a tree and write a simile or metaphor extended to a paragraph. The third step is to refine, eliminate unnecessary words, and turn that metaphorical paragraph into a poem.

Activity 10

The student should choose a specific environment he knows and can describe well. Then he needs to create a character and a conflict. Make a picture book for a small child to help that child appreciate his environment without obviously moralizing.

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6GX31 - 6.12 EDUCATIONAL FIELD TRIPS AND EXTRA-CURRICULAR TRIPS.

(1) Special school trips shall be classified as follows:

(a) Educational field trips. Any trip which is directly related to a unit of instruction being studied by a particular group of pupils shall be considered an educational field trip when it occurs during the school hours, or attendance is required, or the grade of the student is influenced by participation in the activity.

(b) Extra-curricular trips. A trip which is not directly related to the instructional program but which is related to a school sponsored activity shall be considered to be an extra-curricular trip.

(2) Approval of trips.

(a) There shall be developed within each school a program of field trips suitable to each grade level so that there will be a variety of experiences.

(b) A list of suitable educational trips, prepared at intervals by the instructional staff and approved by the superintendent, shall be distributed to all schools. The principal shall obtain the approval of the superintendent for any educational trip not on the approved list. The list shall show educational field trips and extra-curricular trips separately.

(c) The teacher shall submit plans for a trip to the principal for approval who in turn shall submit such plans to the superintendent for final approval at least five (5) days prior to the date of the planned trip.

(3) Parental permission. Written permission of the parent or

guardian shall be required for any pupil who goes on an educational or extra-curricular trip unless the student has attained eighteen years of age. Written permission shall be provided for each trip except for the activities approved by the Florida High School Activities Association.

(4) Nonparticipants. Proper arrangements shall be made for any pupil or pupils who do not go on a planned field trip.

(5) Costs. No charge may be made to a pupil for the cost of an educational field trip. Charges shall be made to the school as provided in Rule 8.13.

(6) Transportation for field trips.

(a) The use of a school bus will be allowed for educational trips after proper arrangements have been made. The provisions of Section 8.13 of these regulations shall apply to all educational field trips.

(b) Trips shall be planned so that the use of the school bus will not interfere with the normal school transportation pattern.

(c) The use of private automobiles for educational and extra-curricular trips is discouraged; but if approved, liability and medical insurance in the amounts required by law shall be mandatory. Any driver shall be an adult and shall hold a valid Florida driver's license. The teacher-sponsor shall see that the provisions of this rule are carried out.

(d) There shall be a non-student adult chaperone in each vehicle. When practical, the chaperone shall be a member of the administrative or instructional staff. The driver of a school bus shall not be considered a chaperone.

(7) No educational field trips may be made during the last two weeks of any school year except by special approval of the superintendent.

Authority: 230.23(7),F.S. Implemented: 230.23(8); 230.33(10),F.S.